



A NEW METHOD AND SYSTEM FOR REAL TIME FERMENTATION PROCESS MONITORING HURO 1001/121/2.2.2 ACRONIM: BIOETHANOL

The project

A new method and system for real time fermentation process monitoring HURO 1001/121/2.2.2 BIOETHANOL is implemented under the Hungary-Romania Cross-Border Co-operation Programme 2007-2013 (www.huro-cbc.eu), and is part-financed by the European Union through the European Regional Development Fund, Hungary and Romania. The programme aims to bring the different actors - people, economic actors and communities - closer to each other, in order to better exploit opportunities offered by the joint development of the border area.

Description

The objective of the project is to develop a novel and innovative measurement system to investigate in real time carbohydrates hydrolysis and ethanol fermentation during the bioethanol and wine production in order to increase the economical and technological efficiency. This method will be compared to the classical HPLC and UV-VIS spectroscopy analysis regarding to the economical, time, and technical apparatus consideration. The Romanian partner will develop the method and the new sensors, while the Hungarian partner will valid their measures by HPLC during the fermentation. The Hungarian partner will determined the problematic microbes during the ethanol fermentation. The new method and the microbiological method will allow a quick intervention during the hydrolysis and fermentation to improve the effectiveness of the bioethanol production and the quality of wine. The competence of the Romanian and Hungarian partners are complementary to develop, testing and valid this new method.

Project implementation

01.02.2012 - 31.07.2013

General Objective

Developing a novel method measurement technology in real time for the carbohydrates hydrolysis and ethanol fermentation.

Specific Objectives

1. Realization of the new optical sensors and the software of data acquisition and analysis.
2. Establishing the research procedure for measurements in real time using laser interferometry techniques and method validation.
3. Studies about exogene and endogene factors over fermentation process and hydrolysis reaction in real time.



Two countries, one goal, joint success!

www.hungary-romania-cbc.eu
www.huro-cbc.eu

Direct beneficiaries

The target groups are the bioethanol manufactories, wineries and also the agriculture sector. Across the border there are bioethanol manufactories and many wineries, in Hajdú Bihar County, Hungary and in Bihor County, Romania. Representatives of these border manufactories and wineries, together with others Romanian and Hungarian all over the two countries will be invited at 3 workshops organized by the project partners, to be in touch with the project results and its economical benefits.

Indirect beneficiaries of the project are the other fermentative biotechnological manufactories, food industry, pharmaceutical industry, medicine, research institutes or universities, which use enzymes in their activity.

Project Activities

1. Preparation activities

Representatives of both institutions met in the border events, as they found that they have common concerns and ideas.

2. Project management

Preparation, implementation, coordination and project management.

3. Communications activities

Three workshops will be held in order to promote the novel method and its economical efficiency. For the visibility of the project, will be invited representants of the border area, bioethanol and winery manufactories and also researchers, students, teachers. At these workshops information materials regarding the project (maps and promotional materials about the project) will be provided to participants.

4. Investigation of fermentation and hydrolysis reaction in pure systems

It will be developed and tested new optical sensors using optical fibres and interferometer techniques in order to determine in real time the kinetic of starch hydrolysis reaction, the rate of ethanol fermentation and the concentration of final products.

5. Investigation of fermentation and hydrolysis reaction in real systems

It will be developed and tested new optical sensors for real biomass hydrolysis reaction and for wine fermentation.

6. Studies about exogene and endogene factors over fermentation and hydrolysis reaction

It will be determined the influence of some exogenous and endogen factors over biomass hydrolysis reaction and ethanol fermentation using laser interferometry techniques (determined in real time), and also using HPLC methods.

7. Results interpretation, correlation and dissemination and the novel method validation

It will be done the correlation between laser interferometry techniques data and the others classical spectrophotometer and HPLC methods obtained data. Based on this data correlation it will be validated the novel laser interferometry method.

Budget

Project Partners	Grant rate (ERDF+ state co- financing)	%	Own contribution	%	Total budget
University of Oradea	174,337.10 EURO	98%	3,577 EURO	2%	177,895.00 EURO
Bay Zoltán Nonprofit Ltd., Institute for Biotechnology	140,420.00 EURO	95%	7,390.00 EURO	5%	147,810.00 EURO
	314,757.10 EURO	96.64%	10,947.90 EURO	3.36%	325,705.00 EURO

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